Doing Community Science:
An Egalitarian Community Action Partnership Model

URBAN STEM STEWARDS

Place-based Citizen Science
with Community Partners

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Today we will focus on…

- introduce project- Urban STEM Stewards

- highlight theoretical framework- environmental commons in the urban ecology

- overview of pedagogical practices that work

- share examples of youth activism in Urban STEM Stewards

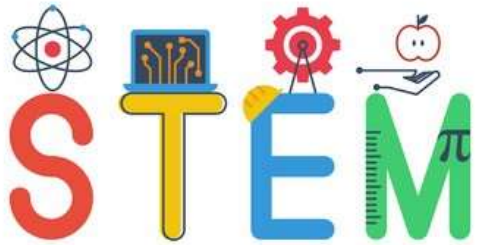
- share study results

In order to pique the interest of students underrepresented in STEM

Connect the utility of STEM learning to community contribution

Goals:

Increase students' beliefs about what they can do with science to contribute to their community



Help students see how they can apply STEM in a variety of future careers to affect their communities for the better

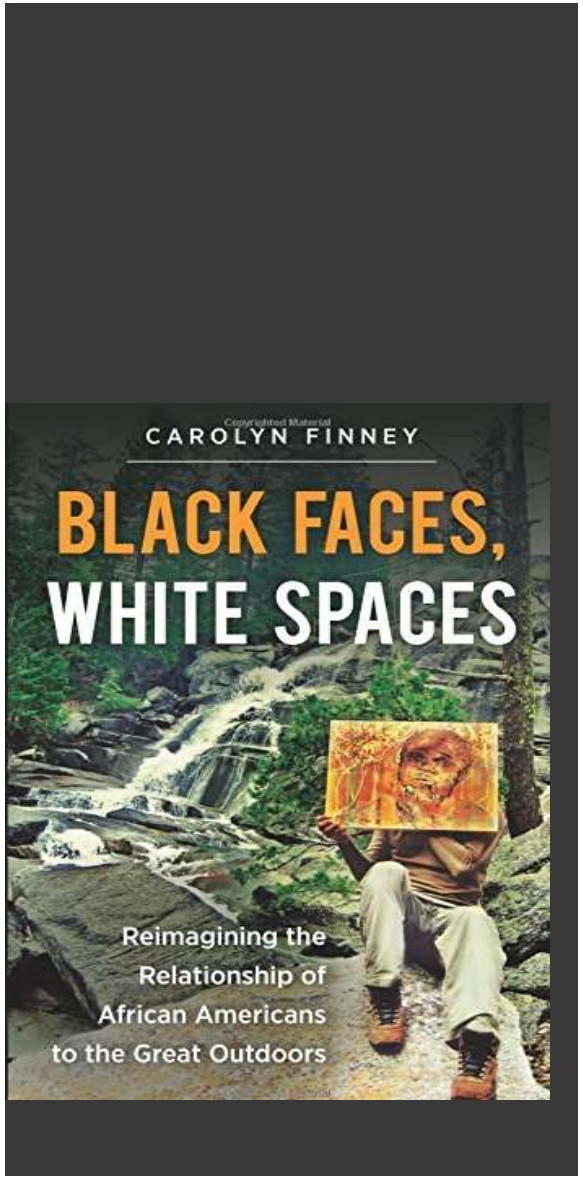
Develop students commitments to the environmental

commons

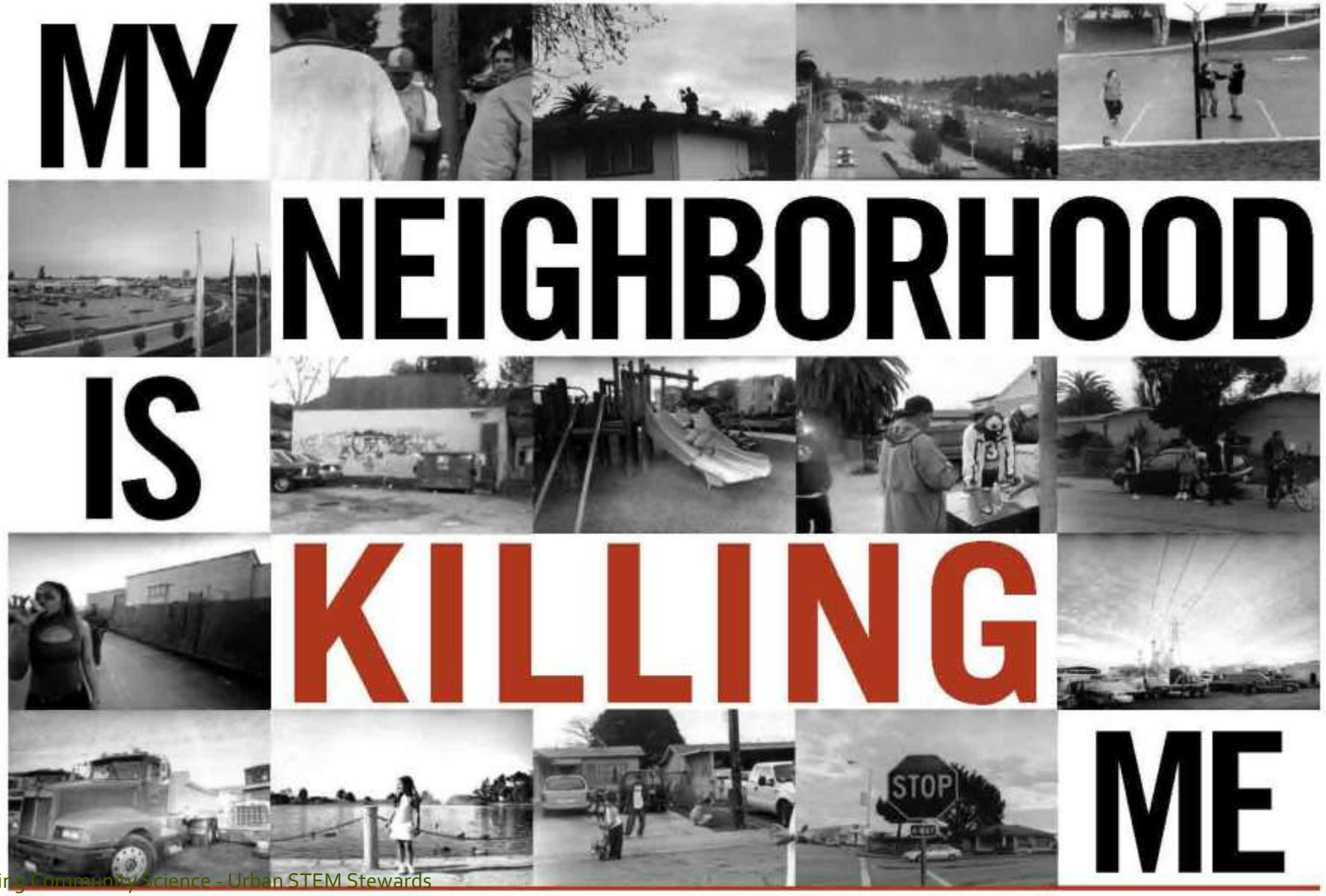
Increasing Awareness: Natural Environment in Urban Ecology

POPULAR IMAGES
HUMANS IN NATURE

HUMANS AND NATURE
IN THE URBAN ECOLOGY



INTERSECTION WITH SOCIAL JUSTICE



For Urban Youth

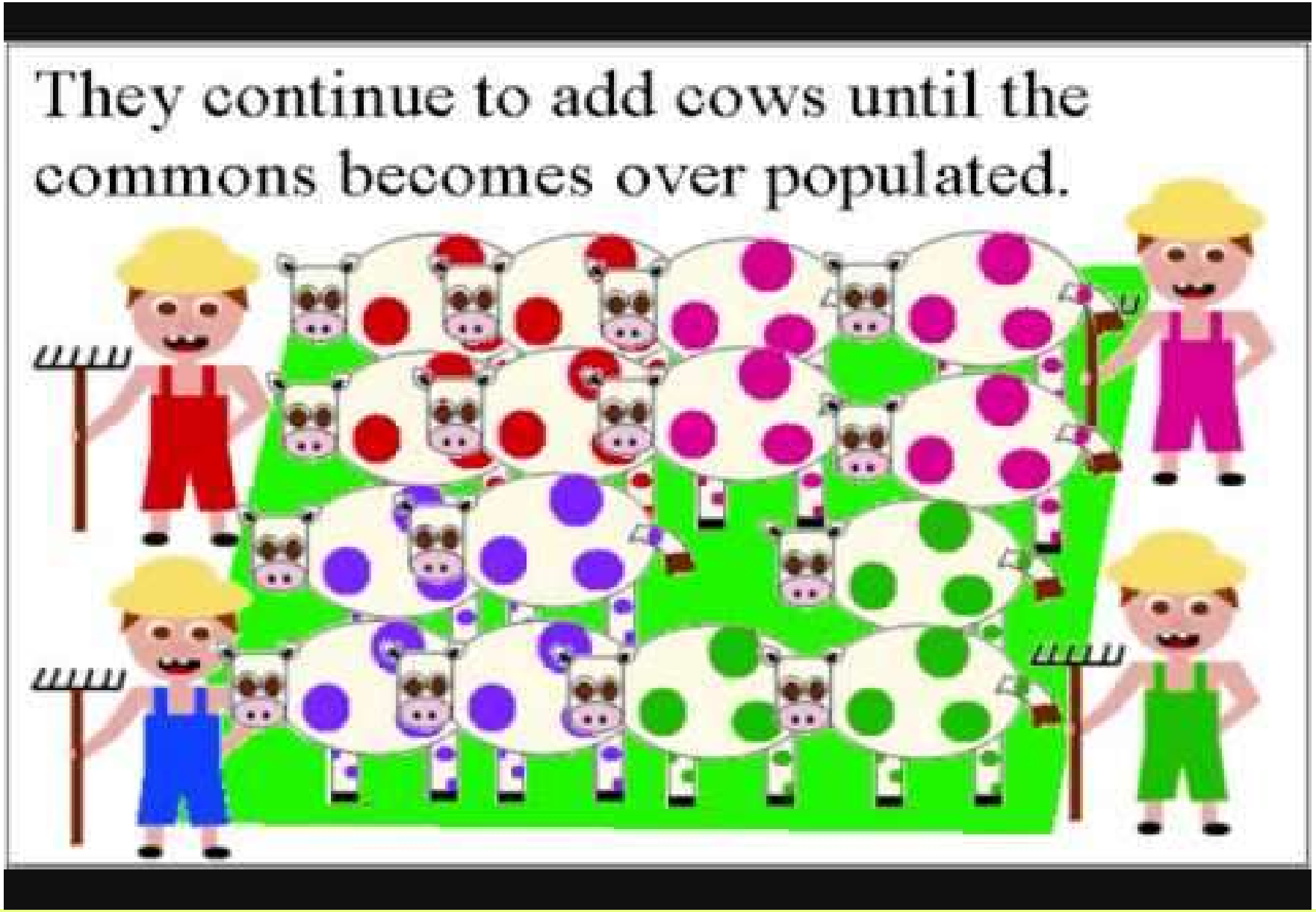
- Build Awareness:
  - Nature is part of urban ecology
  - Quality of life in urban community depends on health of natural environment
  - Human impact can have negative and positive impacts
  - Current environmental conditions are not static
  - Learning can be applied to solve public problems

- Build Community Identification
- COLLECTIVE Action – boosts confidence and efficacy

ENVIRONMENTAL COMMONS

&

Tragedy of the Commons



CHALLENGING THE TRAGEDY

"There is no reason to believe that bureaucrats and politicians, no matter how well meaning, are better at solving problems than the people on the spot, who have the strongest incentive to get the solution right."
— Elinor Ostrom

Place-based Stewardship Education

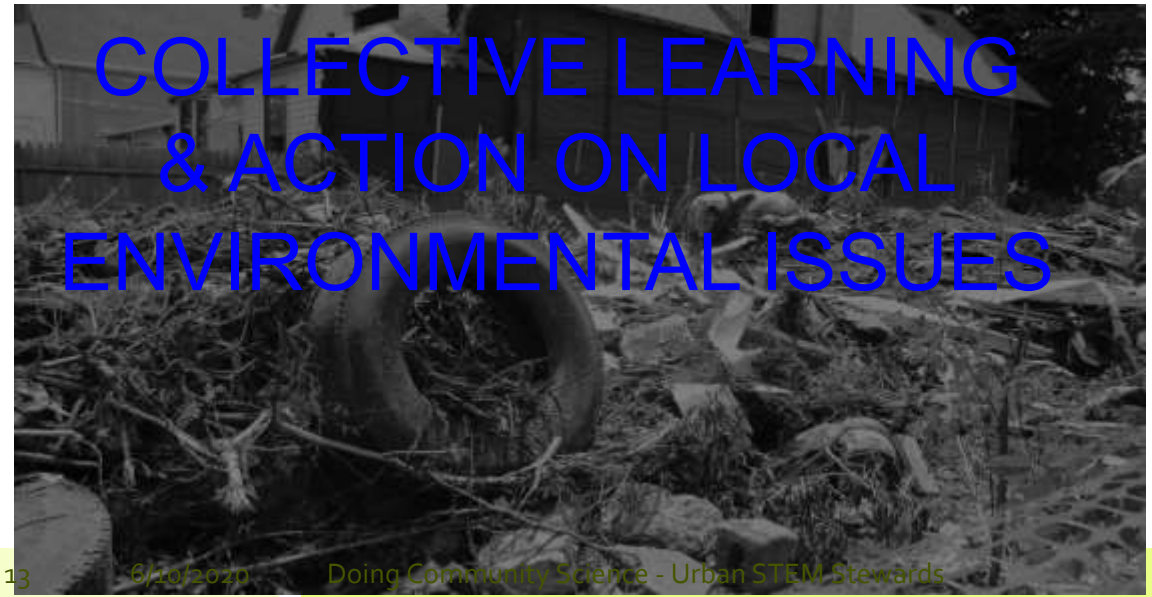
Respects the importance of

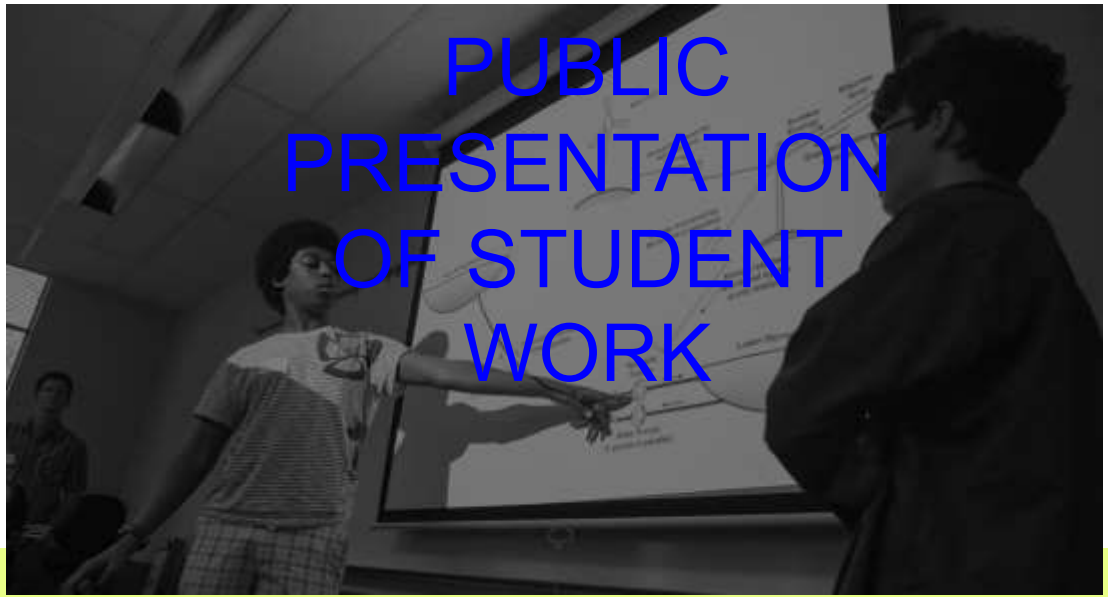
local place and a community's unique environmental context as foundation for learning.

Examples of this model with our collaborator, the Southeast Michigan Stewardship Coalition (SEMIS)

southeast michigan
stewardship coalition
growing visionary educational communities

The Learning Model





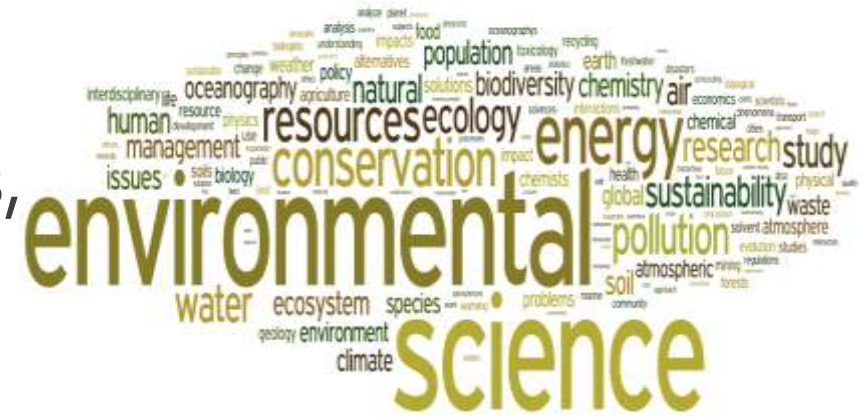
Partnerships with STEM Professionals

STEM Knowledge and Skills

- Identify local environmental problem
- Observe, collect/analyze data
- Propose/enact solution
- Teamwork
- Stakeholders
- Communicate results in public venue

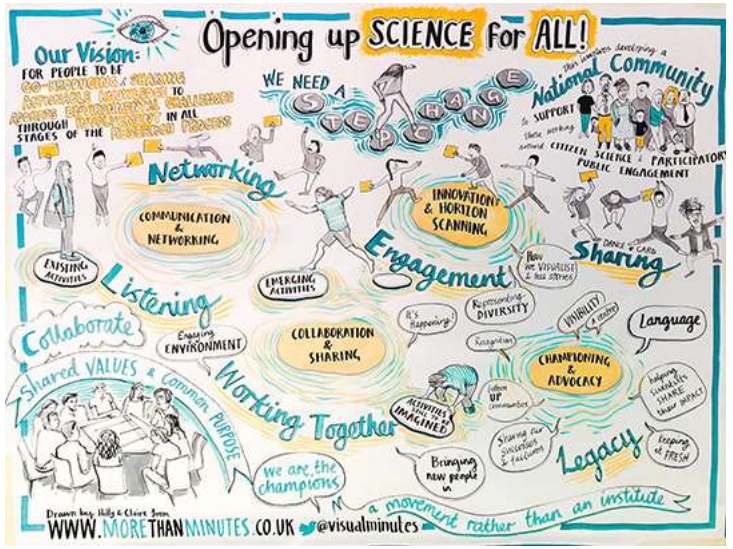
Want students to know they are:

- applying STEM learning to address a local environmental issue, just like community partners,
- engaging in community environmental science



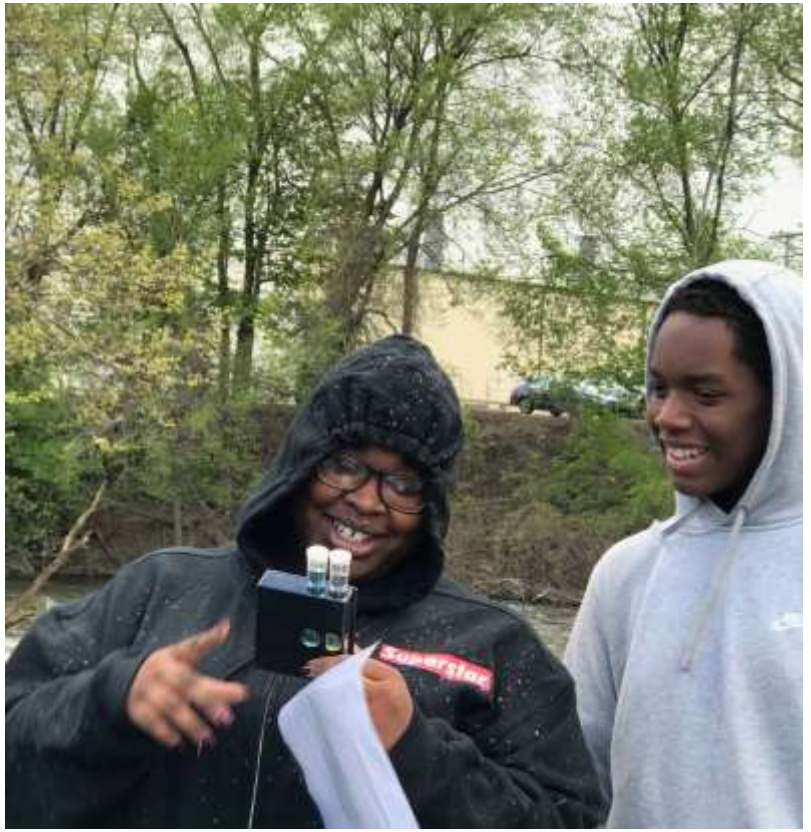
Want students to understand:

- STEM professionals are people *like you* who work in careers where they use *STEM content and process like you are using* to improve conditions in communities *like yours*



How we think this will happen

- Students working WITH community partners/community scientists to DO science
- DOING community science themselves
- Contributing to their community through science - making a positive contribution to their community



Testing and Recording Water Quality of Local River with STEM Partners

Ecosystem Services & Green Infrastructure: Mitigating Flooding on School Grounds
Rain Gardens



Ecosystem Services & Green Infrastructure: Mitigating Flooding on School Grounds by Installing Porous Pavement

Researching and Finding Solutions
Public Presentation of Projects

Making STEM Explicit

- Journal reflections
- Short videos

Reflection pair share

Short reflection with a partner

- What are two ways YOU use science in your work to help the community
- Explain how using science in this way helps the community

What students learn from their stewardship projects

ENVIRONMENTAL COMMONS:
NATURAL RESOURCES ON WHICH LIFE DEPENDS

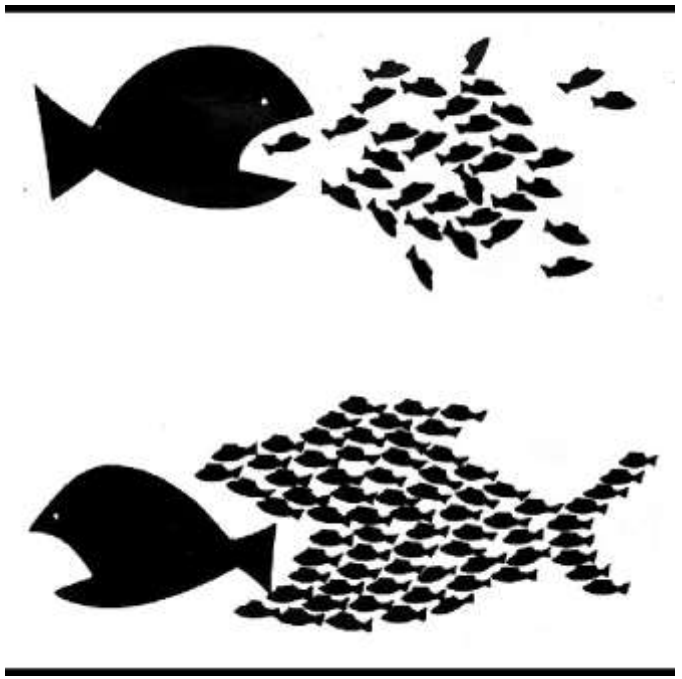
- Awareness of Nature in Urban Space
- Diversity and Ecological Balance in Nature
- Interdependence

  Healthy natural systems and species' well being

  Between health of humans and other living things
- Environmental Identity
- Human Impact and Agency

ENVIRONMENTAL COMMONS: COLLECTIVE DELIBERATION AND ACTION IN PUBLIC SPACES

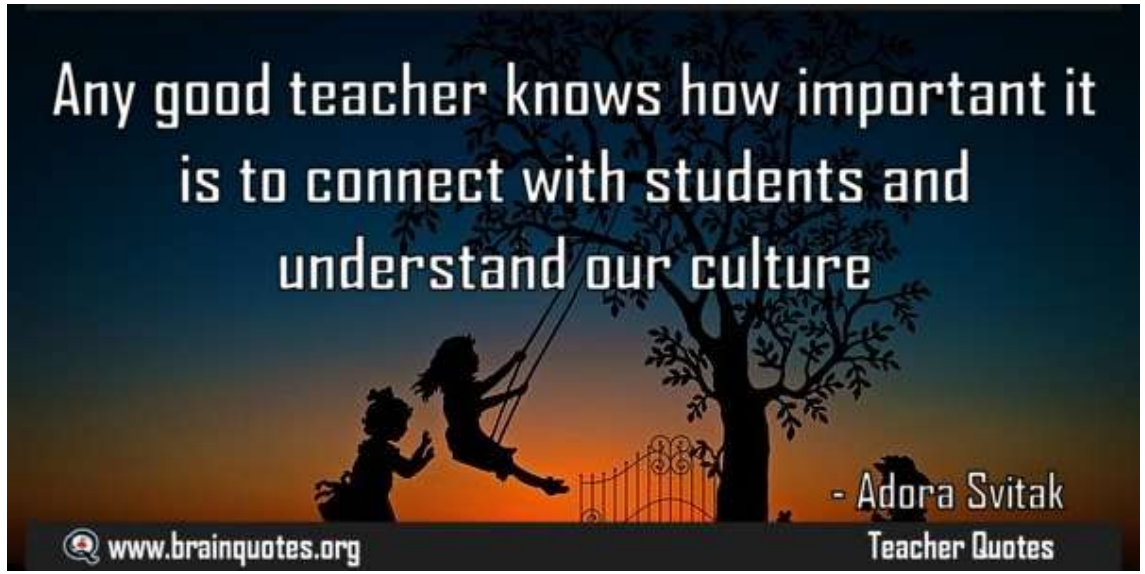
- Benefits and Need for Team Work
- Dynamics within the group - Interdependence
- Civic competencies gained in group work
- Collective Efficacy
- Generativity
- Identifying with the broader community



Increases

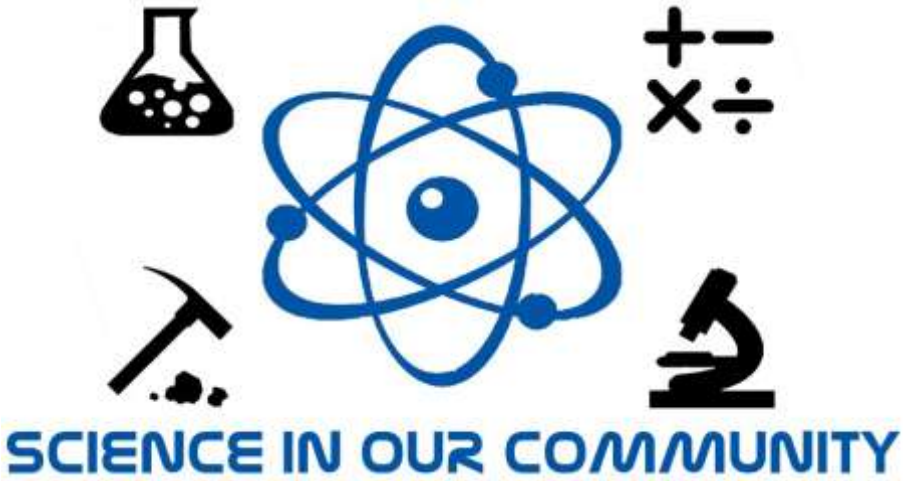
- Community relevance of class

- Cultural connection of class



Increases

- Science job affordances-community contribution
- Community contribution of scientists



Increases

- like/enjoy a job using science

- confidence in getting/succeeding in a job using science

Increases

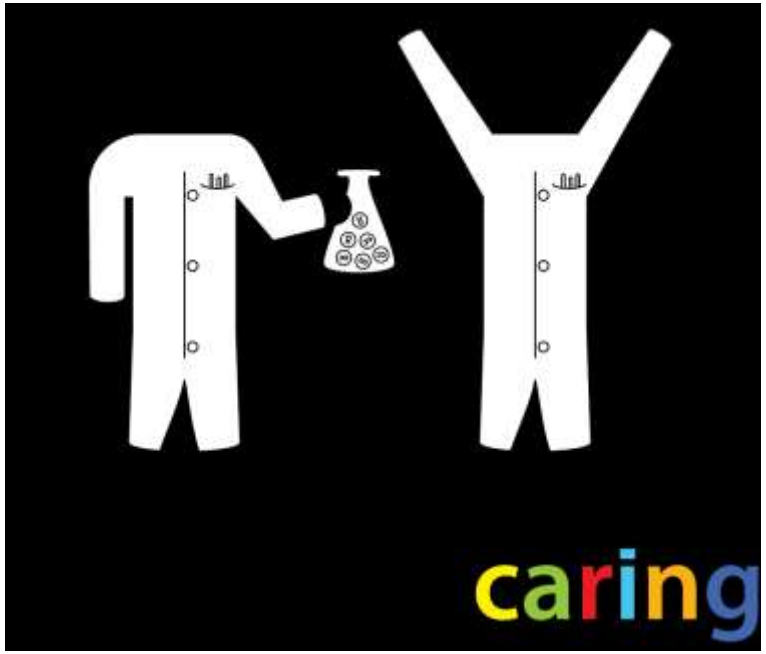
- interest in environmental science/action

- sense of civic efficacy

Increases

- beliefs about the utility of science/their class for their lives and for solving community problems

- beliefs that most people can understand science and that caring about people is integral to doing science



Main story

Students showed gains in their beliefs about the USEFULNESS of *doing* science in this way (applying science to local environmental issues) for enabling them to ADDRESS COMMUNITY NEEDS.

What role can your children play in protecting our earth?

Take aways

What ideas do you want to take away, implement, or modify for your own practice?

Jot down ahas and things to remember

- Reflecting is on applying science to contribute to community is important
- Doing/using science is more relevant than being scientists
- Sharing in public forums is important
- Exposing students to careers/connections can make a difference

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southeast michigan stewardship coalition

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